



CONSPECTUS OF CYMBIDIUM (ORCHIDACEAE) IN PAPUA NEW GUINEA WITH THE DESCRIPTION OF A NEW SPECIES

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ABSTRACT:

The status of species of *Cymbidium* occurring in Papua New Guinea is reviewed. Four species are recognised; *C. lancifolium*, *C. papuanum* (here reinstated), *C. robustum* (doubtfully distinct from *C. lancifolium*) and *C. acuminatum* (described as new). A key to these species is provided as are details of their taxonomy and ecology.

Reeve (1984) provided a modern account of the genus *Cymbidium* Sw. in Papua New Guinea, detailing three species (*C. ensifolium* (L.) Sw., *C. lancifolium* Hook. and *C. papuanum* Schltr.) and mentioning *C. robustum* A. Gilli in a footnote. The genus was later monographed by Du Puy and Cribb (1988), who recognised only *C. lancifolium* and *C. ensifolium* as occurring in Papua New Guinea. Their treatment is conservative in the extreme, adopting the view of widespread variable taxa and failing to recognise local entities at any level. The result is a masking of the biodiversity exhibited by *Cymbidium* in Papua New Guinea.

A study of the specimens at various herbaria (CBG, K, L, LAE) and field collections by one of us (MAC, see Clements and Ziesing 1990) have convinced us that a reassessment of the genus in Papua New Guinea is needed. In this paper we reinstate *C. papuanum* as distinct from *C. lancifolium* and describe as new the species recorded as *C. ensifolium*. *Cymbidium robustum* is considered doubtfully distinct from *C. lancifolium*, but is maintained in this treatment in the hope that

its status can be elucidated by further collections. A key to the species of *Cymbidium* in Papua New Guinea is provided.

MATERIALS AND METHODS

The description of these new species was made from a range of sources including fresh living plants, dried herbarium specimens, spirit preserved specimens stored in BANG mix (65 % ethanol, 5 % glycerol and 30% water), floral dissection cards and 35 mm colour transparencies of flowers and plants. Specimens were examined from the following herbaria: BRI, CANB, CBG, K, L, MEL, P, W and Z. Herbarium abbreviations follow Holmgren et al. (1990). Unless otherwise indicated, all types (or photographs thereof) and collections cited have been seen.

KEY TO PAPUA NEW GUINEA SPECIES OF CYMBIDIUM

1. Leaves linear, margins serrulate, tepals with c. 5 longitudinal stripes *C. acuminatum*
- 1a. Leaves elliptical-lanceolate to lanceolate, margins entire, tepals not striped or with a single longitudinal stripe 2

2. Plant stoloniferous, leaves small 4-10 cm long, inflorescence extending above the leaves
C. papuanum

2a. Plant clumping, leaves 10-50 cm long, inflorescence not extending above the leaves

3

3. Pseudobulbs to 5 cm wide, labellum apex truncate
C. robustum

3a. Pseudobulbs to 1.5 cm wide, labellum apex acute
C. lancifolium

TAXONOMY

Cymbidium lancifolium Hook., Exot. Flora 1: t. 51 (1823). (Plate 7A).

Type: cult. Liverpool Botanic Gardens, Shepherd ex 'East Indies', Dr. N. Wallich s.n. (Holotype K!).

Synonymy - for a list of synonyms of material collected outside of Papua New Guinea, see Du Puy and Cribb (1988).

DESCRIPTION: See Reeve (1984) and Du Puy and Cribb (1988).

FLOWERING PERIOD: May to August.

ILLUSTRATIONS: page 36, top RHS, Reeve (1984); - page 87, top LHS, Jones (1990); page 58, Zenghong et al. (1993).

DISTRIBUTION: In Papua New Guinea known only from the Enga Province; also widely distributed from Japan, China and northern India to Malaysia and Malesia.

ECOLOGY: Terrestrial in leaf litter on moderate to steep slopes in rainforest dominated by *Castanopsis acuminatissima* (Blume) A.DC. Altitude: 1400-1500 m.

RECOGNITION: In Papua New Guinea *C. lancifolium* is characterised by the following combination of features; clumping habit; subterete pseudobulbs to 15 cm x 1.5 cm; elliptical-lanceolate to lanceolate, petiolate leaves to 50 cm x 5 cm; inflorescence as long

as or, usually, shorter than the leaves; racemes 3-10-flowered; flowers porrect, opening widely; labellum to 18 mm x 8 mm, the apex acute and recurved.

CONSERVATION STATUS: Uncertain.

SPECIMENS EXAMINED: PAPUA NEW GUINEA; Enga Province, Korombi, Paiela, Porgera District, July 1982, T.M. Reeve 702 (AMES!, CBG!, E, K, L, LAE!, NSW).

Cymbidium papuanum Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 953 (1913).

Type: 'Kaiser-Wilhelms-Land: [In humus] in the forests of the Bismarck Range, alt. c. 1600 m.', Nov. 1908, R. Schlechter 18680 (Holotype B†).

DESCRIPTION: See Schlechter (1913) and Reeve (1984).

FLOWERING PERIOD: Sporadic.

ILLUSTRATIONS: plate 336, figure 1296 (Schlechter 1928); page 34, 35 & 36, bottom LHS, Reeve (1984); page 248, bottom RHS, Cruttwell (1990).

DISTRIBUTION: Endemic in Papua New Guinea (Western Highlands Province, Southern Highlands Province, Chimbu Province, Madang Province, Eastern Highlands Province, Milne Bay Province).

ECOLOGY: Terrestrial in leaf litter on slopes in montane rainforests dominated by *Castanopsis acuminatissima*. Altitude: 1300-2000 m.

RECOGNITION: *Cymbidium papuanum* is characterised by the following combination of features; stoloniferous habit with long creeping rhizomes producing new plants at intervals; dwarf habit (plants to 18 cm tall); subterete pseudobulbs to 5 cm x 4 mm; inflorescence longer than the leaves; racemes 1-4-flowered; flowers semi-nodding, not opening widely; labellum to 17 mm x 9 mm,



the apex acute and uncinat.

NOTES: Reeve (1984) records that the plants of this species may become dormant and leafless in the dry season.

CONSERVATION STATUS: Uncertain.

SPECIMENS EXAMINED: PAPUA NEW GUINEA; Western Highlands Province; Minj District, Kongonol - Bomol near Nondugl, alt. 1500 m, May 1980, T.M. Reeve 437 (CBG!, E, K!, L, LAE!).

ETYMOLOGY: Derived from its place of origin, Papua New Guinea.

Cymbidium robustum A. Gilli, Ann. Naturhist. Mus. Wein 84/B: 5-47 (1983).

Type: Papua New Guinea, Western Highlands, Chimbu District, often in low bushes at the edge of forests around Kompiam, alt. 1650 m, 24 Feb. 1974, A. Gilli 546 (Holotype W).

DESCRIPTION: See Gilli (1983).

FLOWERING PERIOD: February.

ILLUSTRATIONS: Gilli (1983).

DISTRIBUTION: Known with certainty only from the type collection in Papua New Guinea.

ECOLOGY: Terrestrial in rainforest. Altitude: 1650 m.

RECOGNITION: *Cymbidium robustum* is very similar to *C. lancifolium* but can be distinguished by the broader pseudobulbs (to 5 cm wide) and the truncate apex of the labellum.

NOTES: Reeve (1984) considers *C. robustum* to be a variant of *C. lancifolium*. He may well be correct as the description of the two are remarkably similar. However Gilli emphasises the truncate labellum apex. In addition the broad pseudobulbs (to 5 cm broad in the description) are unusual for species in this

section of the genus. Consequently we have retained *C. robustum* in this treatment pending further research and study of fresh material when available.

CONSERVATION STATUS: Uncertain.

ETYMOLOGY: Derived from the Latin *robustus*, strong, robust.

Cymbidium acuminatum M.A. Clem. et D.L. Jones, spec. nov.

affinis *C. ensifolii* (L.) Sw. sed floribus prominente brunneo-striatis; tepalibus acuminatis; et labelli lobis lateralibus abrupte incurvis parum irregularibus, lobo medio anguste triangulari acuminato, differt.

TYPE: cultivated at Australian National Botanic Gardens, Australian Capital Territory, Canberra, 22 Dec. 1992, M.A. Clements (Holotype CANB). PROVENANCE: plant originally collected from the hills behind Garassa, Morobe Province, Waria River District, Papua New Guinea, 6 Apr. 1990, M.A. Clements 6387, P.D. Zeising, E. Dauncey, D. Benzing, A. Kairo and O. Simeon.

[*Cymbidium ensifolium* auct., non (L.) Sw.; Reeve, Orchadian 8(2): 33-34, t. (1984)]

Terrestrial **herb** forming dense clumps. **Roots** to 6 mm across, white. **Pseudobulbs** 25-35 mm x 15-25 mm. **Leaves** 3 or 4 per pseudobulb, ligulate to narrowly ensiform, 30-120 cm x 10-23 mm, sessile, erect to arcuate, mid-green, mid-vein carinate abaxially, two other veins prominent, margins serrulate, apex acuminate to long-acuminate. **Racemes** erect, 30-80 cm long, the peduncle much longer than the rachis, 2-7-flowered in the distal third. **Floral bracts** subulate, 10-14 mm x 1.5-2 mm, acuminate. **Pedicel** plus **ovary** 18-23 mm long, slender, obliquely erect to porrect. **Flowers** c. 5 cm across, opening widely, light green to yellow or brownish, with five to

seven prominent dark red longitudinal lines on the tepals, labellum yellow with red spots and suffusions. **Dorsal sepal** linear to ensiform, 13-15 mm x 3-4 mm, incurved over the column, flat, apex often slightly recurved, acuminate. **Lateral sepals** linear to ensiform, 13-15 mm x 3-4 mm, widely divergent, flat; apex acuminate. **Petals** narrowly linear-lanceolate, 18-22 mm x 3-4 mm, porrect and closely flanking the column, flat acuminate. **Labellum** porrect to obliquely deflexed, 18-20 mm x 10-12 mm, deeply three-lobed; lateral lobes bluntly deltate, c. 4 mm wide, erect and flanking the column, entire to slightly irregular; mid-lobe narrowly deltate, recurved in distal third, with margins irregular, and apex long-acuminate. **Lamina callus** consisting of two broad plates, prominent on the lateral lobes, thickening distally, ending in two, incurved, raised lobes in close contact with each other. **Column** linear, curved, 10-12 mm x c. 3 mm, flattened or shallowly channelled anteriorly; wings small extending above the anther. **Anther** c. 2 mm across. **Pollinia** c. 2 mm across, orange, waxy. **Stigma** transversely oblong, c. 2 mm wide, sunken. **Capsule** linear-oblong, 25-30 mm x 8-10 mm, dark green, shallowly ribbed, erect. **Fig. 7 & Plate 7B.**

FLOWERING PERIOD: November to March; also sporadic.

ILLUSTRATIONS: top LHS, page 36, Reeve (1984) - as *Cymbidium ensifolium*; page 52, top plate, Zenghong et al. (1993).

DISTRIBUTION: Endemic to Papua New Guinea (Morobe Province, Southern Highlands Province and Milne Bay Province).

HABITAT: Terrestrial in leaf litter in or along rainforest margins, in forests dominated by *Castanopsis acuminatissima*.

Altitude: 450-1300 m.

RECOGNITION: *Cymbidium acuminatum* is characterised by the following combination of features; tepals with 5-7 prominent dark red stripes and acuminate apices; straight, widely divergent lateral sepals; abruptly incurved labellum lateral-lobes with irregular anterior margins; and, a narrowly deltate labellum mid-lobe with an acuminate apex.

AFFINITIES: *Cymbidium ensifolium* is similar to *C. acuminatum* but has green tepals lacking prominent striping and with subacute to obtuse apices, decurved, falcate lateral sepals, broadly rounded labellum lateral lobes, and an ovate mid-lobe with an obtuse to subacute apex.

NOTES: *Cymbidium ensifolium* occurs throughout south-east Asia. The name has been misapplied to Papua New Guinea plants.

CONSERVATION STATUS: Not known.

ETYMOLOGY: From the Latin, *acuminatus*, in reference to the sharply pointed tepals and labellum apex.

SPECIMENS EXAMINED: PAPUA NEW GUINEA; Southern Highlands Province; Ibu Creek, E of Inu Station, Lake Kutubu, alt. 850 m, Nov. 1982, T.M. Reeve 1174 (CBG! E, K, L, LAE, NSW).



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Plate 7A.

Cymbidium lancifolium, cultivated plant from China, Yunnan Province.



Plate 7B.

Cymbidium acuminatum, Clements 6387.

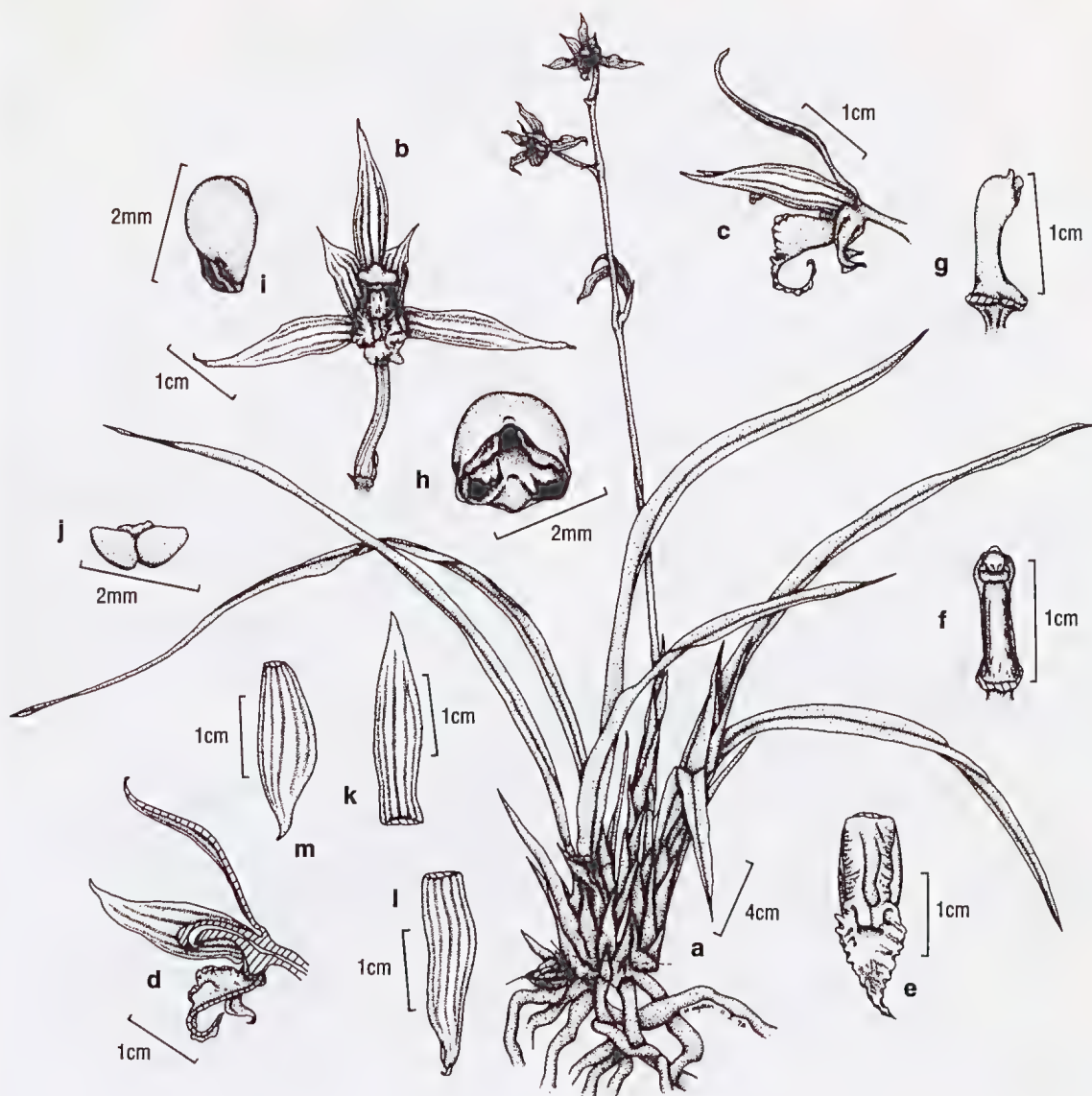


Figure 7. *Cymbidium acuminatum*, Waria River District, Papua New Guinea, Clements 6387: **a.** plant: **b.** flower from front: **c.** flower from side: **d.** longitudinal section through flower: **e.** labellum (not flattened): **f.** column from front: **g.** column from side: **h.** anther from back: **i.** anther from side: **j.** pollinia: **k.** dorsal sepal: **l.** lateral sepal: **m.** petal.